

AMENDMENTS TO THE CLAIMS:

The following listing of claims will replace all prior versions and listings of claims in the captioned application.

Listing of Claims:

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Claim 15. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered tungsten, and copper ~~and/or lead~~.

Claim 16. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture that includes powdered tungsten, and copper ~~and/or lead~~, said joined explosive units being enclosed within a housing between oppositely facing, substantially planar housing end walls, planes of said housing end walls disposed substantially normal to said axis of revolution and spacer elements disposed between opposite axial ends of said joined units and said housing walls to substantially separate respective axial ends of said joined units from adjacent housing end walls separated from adjacent housing structure at opposite axial ends by

spacer elements.

Claim 17. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined ~~explosive~~ units being enclosed by a housing having a fluid tight assembly with a top sub, an inside wall of said housing having a jet window perimetrically adjacent conical surface elements of said apex joined explosive units, said jet window comprising a pair of inside wall channels turned into said inside housing wall walls, each of said inside channels being axially delineated by a pair of opposite radial side walls disposed substantially radially of said axis and ~~of said channels being~~ substantially symmetric about said juncture plane.

Claim 18. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined ~~explosive~~ units being enclosed by a housing having a fluid tight assembly with a top ~~tool~~ sub, an inside wall of said housing having a jet window perimetrically adjacent conical surface elements of said joined ~~respective to said explosive~~ units, said jet window comprising a pair of inside ~~wall~~ channels turned into said inside housing wall walls, each of said inside channels being delineated along said axis of revolution by a pair of opposite radial side walls disposed substantially radially of said axis and ~~channels being~~ substantially symmetric about said juncture plane whereby wherein radial side walls ~~respective to one channel~~

of said pair substantially align with conical base planes respective to said explosive units.

Claim 19. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being ~~respectively~~ formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said units being clad with a liner that comprises a mixture of that includes powdered tungsten, copper and ~~and/or~~ lead and wherein the ~~a~~ copper and lead portion ~~constituency~~ of said mixture comprises about 80% copper.

Claim 20. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being ~~respectively~~ formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, conical surface elements of said joined units being clad with a liner that comprises a mixture that includes powdered tungsten, copper and ~~and/or~~ lead and wherein the ~~a~~ copper and lead portion ~~constituency~~ of said mixture comprises about 20% lead.

Claim 21. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being ~~respectively~~ formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a substantially common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said

juncture plane for receipt of a detonation booster, conical surface elements of said joined units being clad with a liner that comprises a mixture that includes powdered tungsten, copper and ~~and/or~~ lead and wherein about 80% or greater of said mixture is tungsten ~~said liner comprises about 80+% tungsten.~~

Claim 22. (Currently amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being ~~respectively~~ formed about an axis of revolution into a substantially normal ~~substantial~~ cone having a substantially normal base plane and a ~~normally~~ truncated apex, said units being joined coaxially at said truncated apices ~~apex~~ along a common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined ~~explosive~~ units being encased within a substantially cylindrical housing having circumferential lines of structural weakness in an external surface of said housing adjacent ~~extended~~ base planes ~~lines~~ of said cones.

Claim 23. (Previously Presented) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing having an internal jet window between conical base planes of said explosive units, said jet window comprising at least a pair of circumferential channels about a cylindrical interior wall of said housing, one of said channels having a greater inside diameter than the other and the other of said channels having a greater axial length between substantially radial sidewalls, said one channel being disposed between the sidewalls of said other channel.

Claim 24. (Previously Presented) A shaped charge tubing cutter comprising a pair of substantially matched explosive units respectively formed about an axis of revolution into substantial cones having a normally truncated apex, said cones being

joined coaxially at said truncated apex along a common juncture plane, an aperture within said units substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said explosive units being encased within a substantially cylindrical housing said housing being secured to a substantially cylindrical top sub, said top sub having a substantially axial aperture aligned with the axis of revolution of said explosive units for receipt of a detonator, said axial aperture having at least one lateral pressure vent.

Claim 25. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being formed about an axis of revolution into a substantially normal cone ~~cones~~ having a substantially normal base plane and ~~normally~~ truncated apex, said cones being joined coaxially at said truncated apices ~~apex~~ along a common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined ~~explosive~~ units being encased within a substantially cylindrical housing, said cylindrical housing comprising a structurally integral tool centralizer secured to a closed distal end of said housing, said centralizer comprising a plurality of substantially planar ~~flat~~ spring blades, the plane of said blades disposed substantially normal to said axis of revolution.

Claim 26. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being ~~respectively~~ formed about an axis of revolution into a substantially normal cone ~~substantial cones~~ having a substantially normal base plane and a ~~normally~~-truncated apex, said cones being joined coaxially at said truncated apex along a common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined ~~explosive~~ units being encased within a substantially cylindrical housing having resilient, structurally integral centralizer blades ~~arms~~ extending radially ~~axially~~ from said axis of revolution within a plane that is substantially normal thereto, said blades being secured to said housing at a position on said housing that permits said blades ~~arms~~ to flex without engaging circumferential

housing structure.

Claim 27. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal cone ~~substantial cones~~ having a substantially normal base plane and ~~normally~~ truncated apex, said cones being joined coaxially at said truncated apices ~~apex~~ along a common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined explosive units being suspended within a substantially cylindrical housing between opposing, internal walls of said housing disposed substantially normal to said axis of revolution, to ~~provide~~ a substantial void space of about 0.100" or more provided between each of said walls and respectively adjacent distal ends of said joined units.

Claim 28. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal cone of revolution having a substantially normal base plane and ~~substantial cones having a normally~~ truncated apex, said cones being joined coaxially at said truncated apices ~~apex~~ along a common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined explosive units being encased within a substantially cylindrical, frangible steel housing having circumferential lines of structural weakness in an external surface of said housing adjacent extended base planes of said cones, said housing having a Rockwell "C" hardness of about 55-60.

Claim 29. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal cone ~~substantial cones~~ having a substantially normal base plane ~~planes~~ and truncated apex ~~apices~~, said cones being joined coaxially at said truncated apices along a common juncture plane, an aperture

within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, a substantially cylindrical housing having a chamber space between opposing walls disposed in a plane substantially normal to an axis of said housing cylinder, said joined explosive units being by suspended between and substantially separated from each of said opposing walls ~~within a by substantially cylindrical housing to provide a substantial void space between each of said walls~~ and a thrust disc disposed substantially co-planar with at least one of said cone base planes for aligning said joined explosive units substantially co-axially within said cylindrical housing.

Claim 30. (Currently Amended) A shaped charge tubing cutter comprising a pair of substantially matched explosive units, each unit being respectively formed about an axis of revolution into a substantially normal cone ~~substantial cones~~ having a substantially normal base plane and ~~normally~~ truncated apex, said cones being joined coaxially at said truncated apices ~~apex~~ along a common juncture plane, an aperture within said joined units extending substantially along said axis and crossing said juncture plane for receipt of a detonation booster, said joined explosive units being disposed between opposite distal ~~further comprising metallic end plates for confining and directing explosive energy, said end plates having base planes disposed substantially normal to said axis of revolution, a substantially cylindrical housing enclosing said joined units between end walls disposed substantially normal to a cylindrical axis of said housing, said end plate base planes of said end plates being substantially spaced from said housing end resiliently suspended within a substantially cylindrical housing between opposing transverse walls and from adjacent housing walls by at least about 0.100" to provide a substantial void space between each of said walls.~~